David Herring - C149

MCST All Hands Meeting Minutes 18NOV93

Time: Every Thursday, 1-2:45 p.m., in 22/G95

ATTENDEES:

Name	Phone	Organization
Anuta, Paul	x69412	RDC
Ardanuy, Phil	982-3714	RDC
Baden, Joan *(Recorder)*	X61378	RDC
Braun, Charles	982-3754	RDC
Bryant, Tom	982-3769	RDC
Burelbach, Jon	X66166	RDC
Guenther, Bruce *(Chair)*	X65205	GSFC
Goff, Tom	982-3704	RDC
Harnden, Joann	x64133	GSFC
Knight, Edward	X62382	RDC
Knowles, Dan	X61378	RDC
Kvaran, Geir	X62382	RDC
McKay, Al	X66739	GSFC
Montgomery, Harry	x68117	GSFC
White, Nicole	x61378	RDC

MINUTES:

Periodically on Fridays (at 12 p.m.) there are brown-bag seminars given by MCST Technical personnel in building 22, G95. If you would like to give a talk yourself, please contact Tom Bryant (982-3769). **The next Brown Bag Seminar will be given on December 3rd by Jon Burelbach on the Internet.**

There will NOT be an All-Hands Meeting (AHM) on November 25th.

Planned Beta Delivery by Geir Kvaran on December 9th.

Kvaran stood up and gave a top-level overview presentation on the Beta Delivery (Enclosure#1) which consumed most of the AHM.

Reactions from Geir's presentation were as follows:

Harry Montgomery wants to make sure that it is clearly stated how the algorithm will do thermal.

Joann Harnden wants to use image-based only if significant improvement is obtained. Joann reminded everyone that this is a top-level presentation and that a lot of these concerns are not addressed at this level.

Bruce Guenther stated that SBRC is assuming that the Black Body is normally Isothermal.

Joann Harnden said MODIS Orbit starts at the Night Equator. Sub-Satellite point must be dark when illuminating the Solar Diffuser.

Phil Ardanuy asked what "Sun counts" were, and Geir Kvaran answered: "When the SDSM is looking at the Sun." Phil said that the Earth radiance illuminates the Solar Diffuser so, "What use will be made of the Solar Diffuser Radiance data when not observing the Sun?" The plan is to close the door when we are not using the Solar Diffuser to look at the Sun.

For Space View, the following observations were derived:
If use middle, all pixels on a focal plan will be viewed through the space view port, Edge samples are in the data available.

Ed Knight noted that SBRC has decided not to descope the MODIS Ground-Based Calibrator (MGBC).

Guenther noted that Pagano has a user-friendly C program of the Radiometric Math Model (RMM) running on the Mac and asked Ed Knight to check on this and retrieve it from Pagano.

Harry Montgomery received detailed algorithm information from SBRC and will distribute this information to the appropriate personnel after the material has been duplicated.

Guenther noted that we need to schedule a time to meet with Mike Weinreb in December regarding Infrared aspects. Guenther asked Joann Harnden to chair the December 2nd meeting because he will be away.

<u>ACTION ITEMS:</u>
#19 Bryant to give a talk on MMS presentation December 2nd.

#20 Knight Get C program from Pagano (RMM) that is supposed to run on MAC.

#21 Knight Show solar spectra with spectral bands for comparison to other instruments to Tom Goff.

#22 Goff discuss SRCA memo (#1510) with Ed Knight.

#23 Joan give Phil Ardanuy a copy of the Cal Workshop minutes.

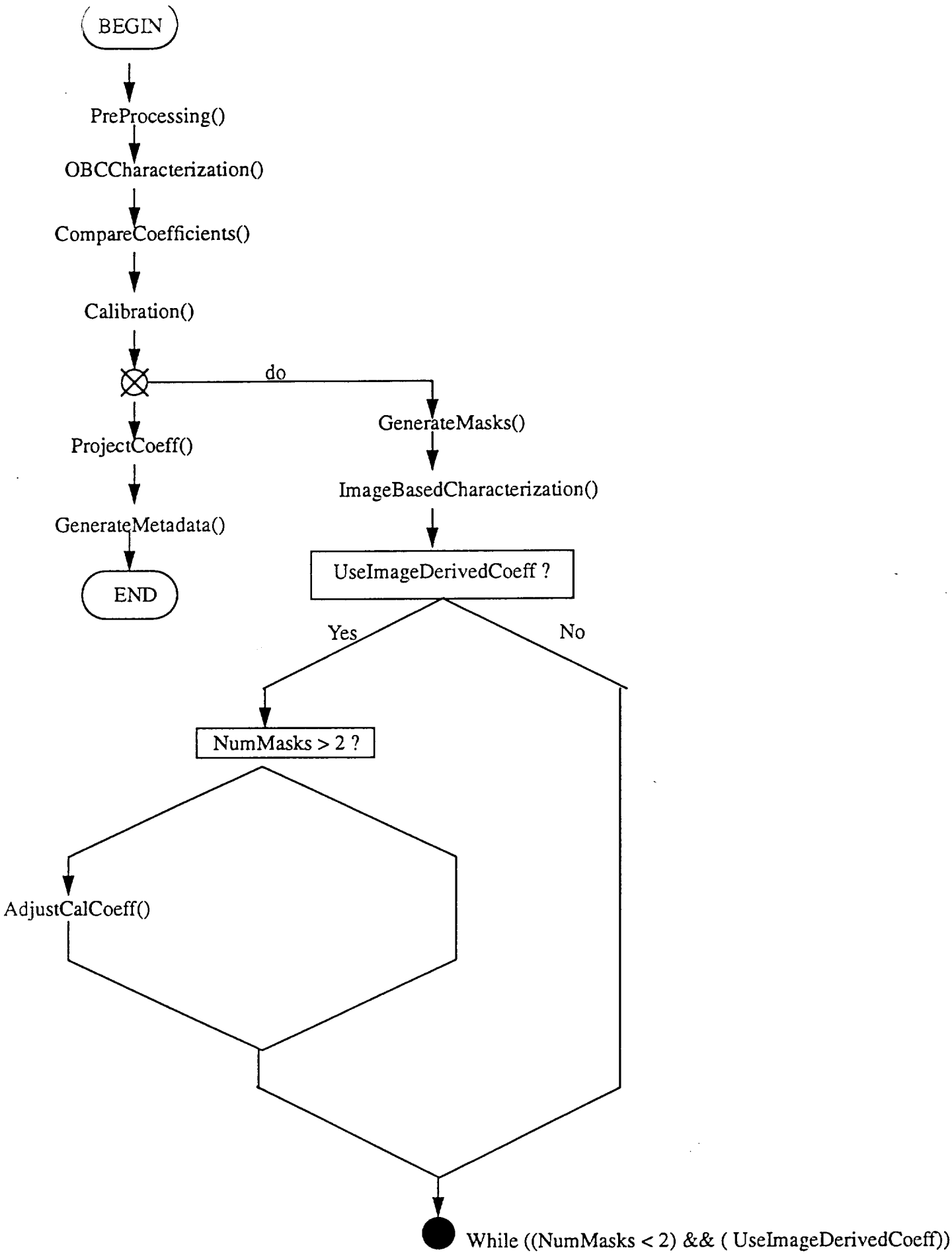
#24 Phil Ardanuy share ASTER dates with Bruce Guenther.

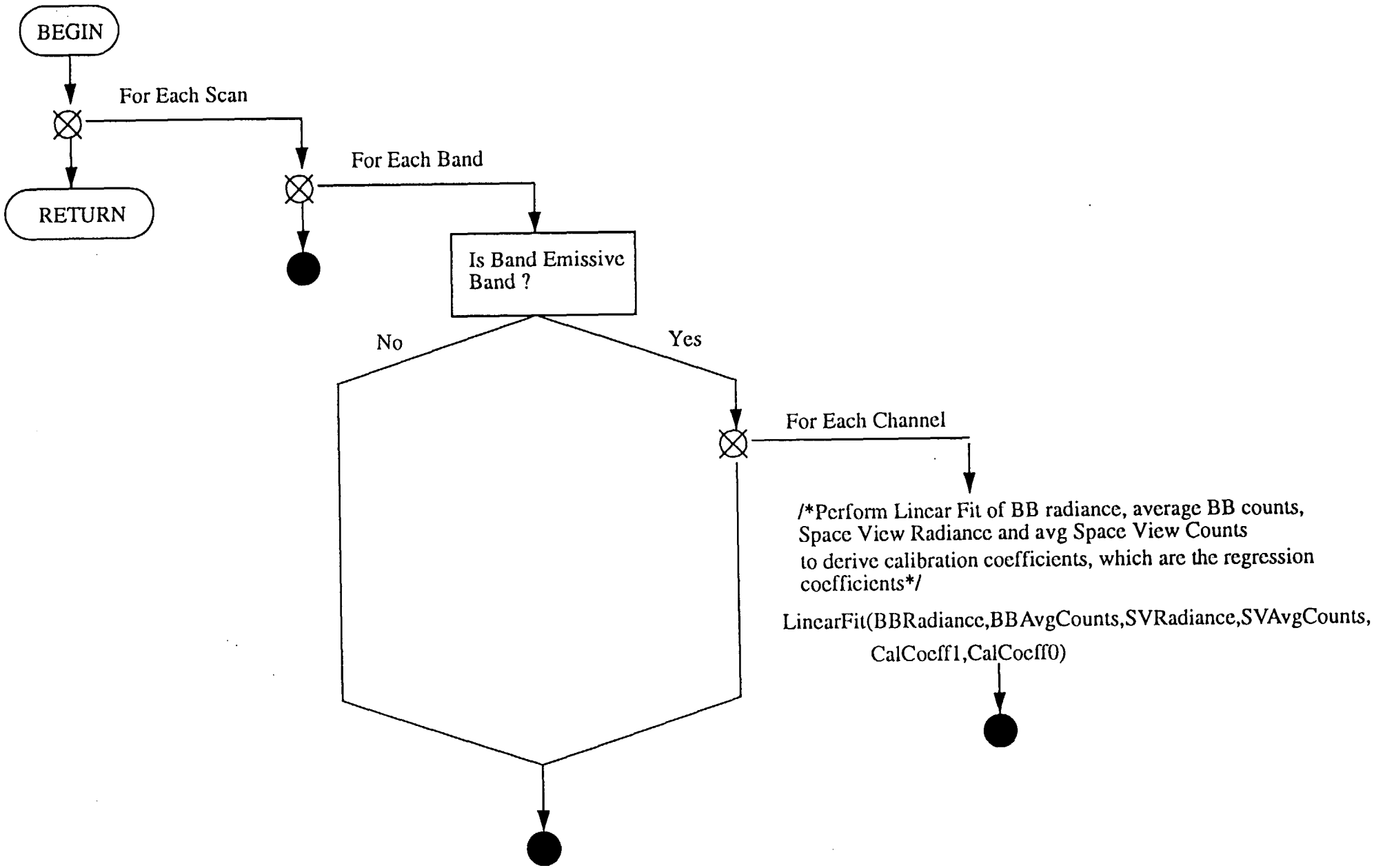
#25 Joann Harnden to chair the December 2 All-Hands Meeting.

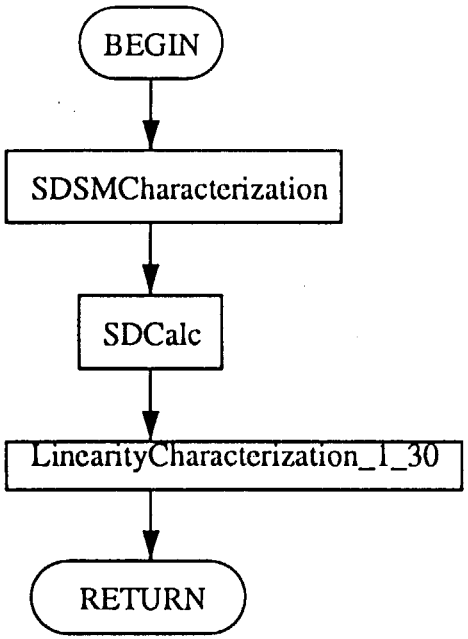
#26 Abel to contact Mike Weinreb and set up a 1/2 day time to meet in December (including seminar).

Enclosure:	#1
Talk By:	Geir Kvaran/RDC/982-3716
Title:	Overview: Beta Delivery
Date Given:	November 18th, 1993
Where:	All-Hands Meeting,1:00 p.m. NASA/GSFC/22/G95

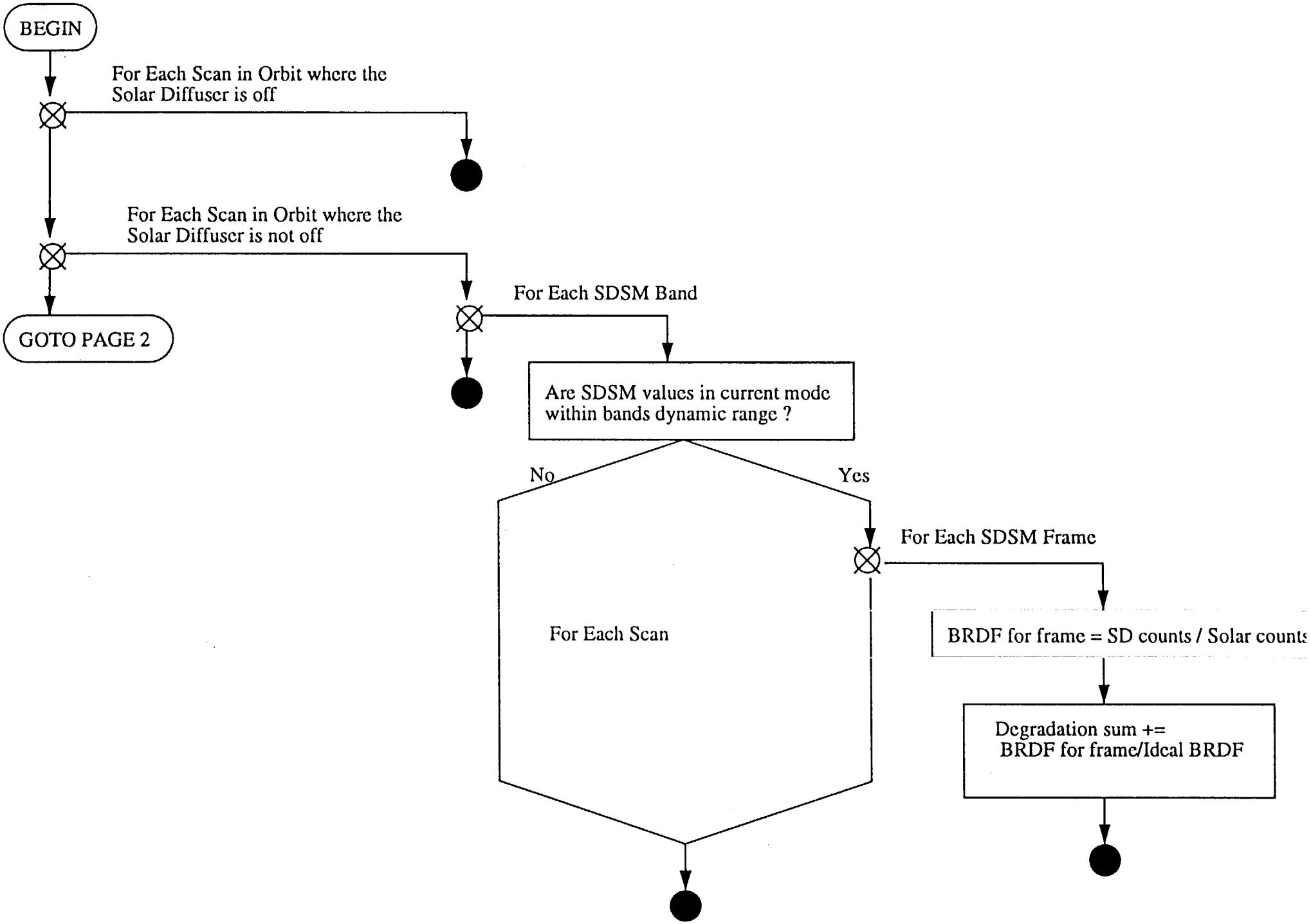
To receive a copy of the enclosures, email Joan (baden@highwire.gsfc.nasa.gov) and request by Enclosure #(s) and Date of presentation.

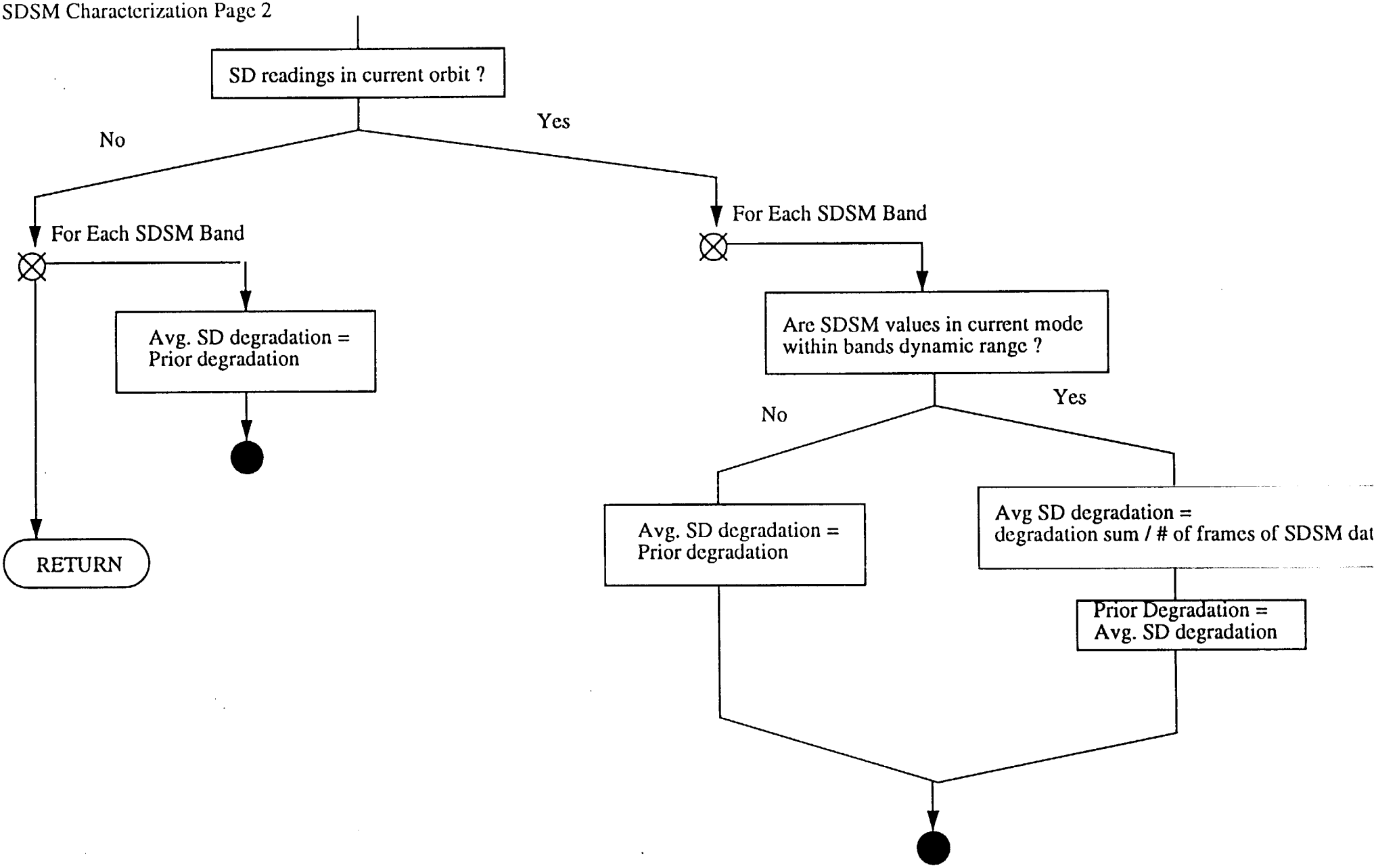

BEGIN
PreProcessing()
OBCCharacterization()
CompareCoefficients()
Calibration()
do
ProjectCoeff()
GenerateMasks()
ImageBasedCharacterization()
GenerateMetadata()
UseImageDerivedCoeff ?
END
Yes
No
NumMasks > 2 ?
AdjustCalCoeff()
While ((NumMasks < 2) && (UseImageDerivedCoeff))

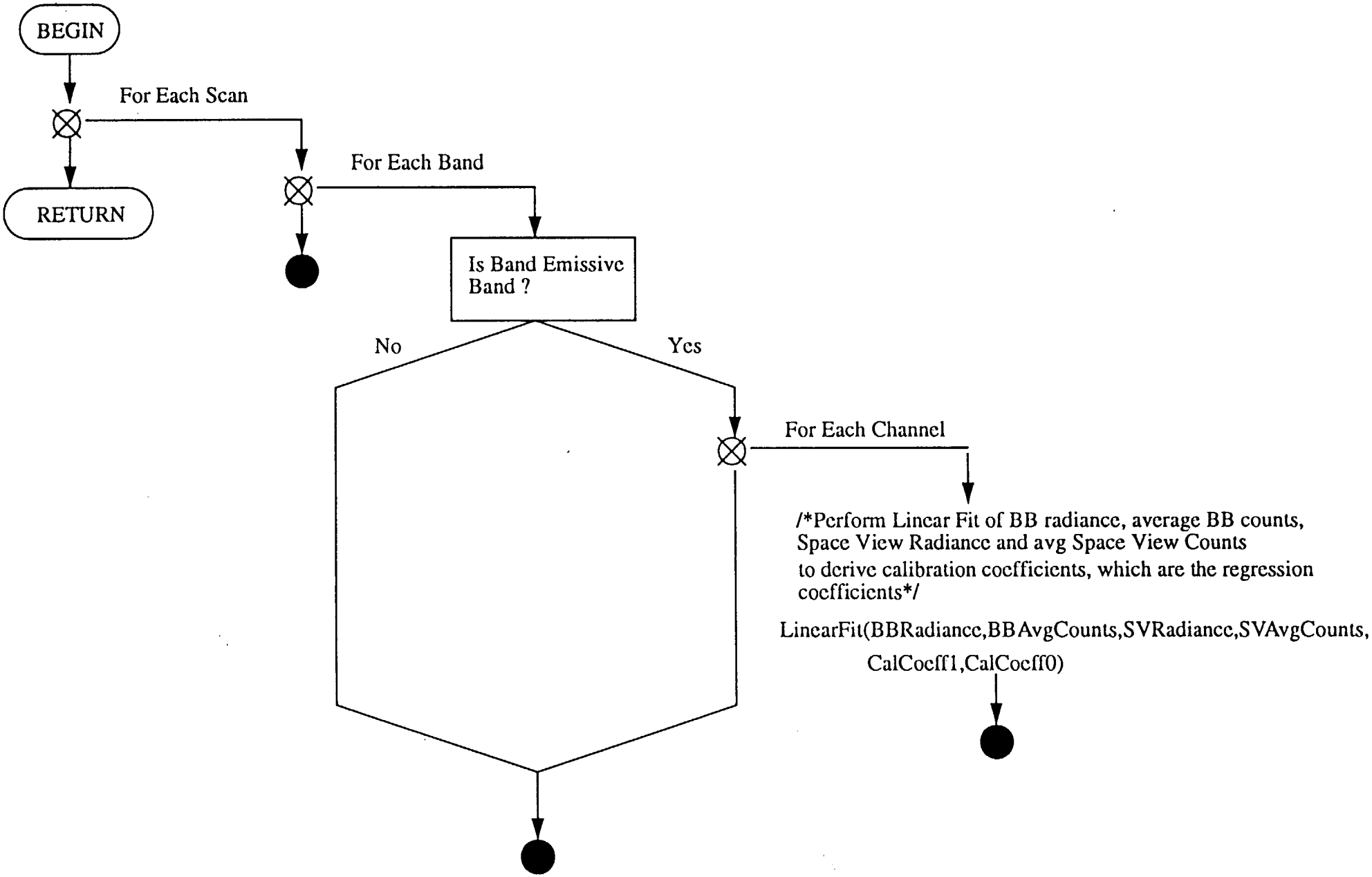

BEGIN
For Each Scan
RETURN
For Each Band
Is Band Emissive Band ?
No
Yes
For Each Channel
/*Perform Linear Fit of BB radiance, average BB counts, Space View Radiance and avg Space View Counts to derive calibration coefficients, which are the regression coefficients*/
LinearFit(BBRadiance,BBAvgCounts,SVRadiance,SVAvgCounts, CalCoeff1,CalCoeff0)

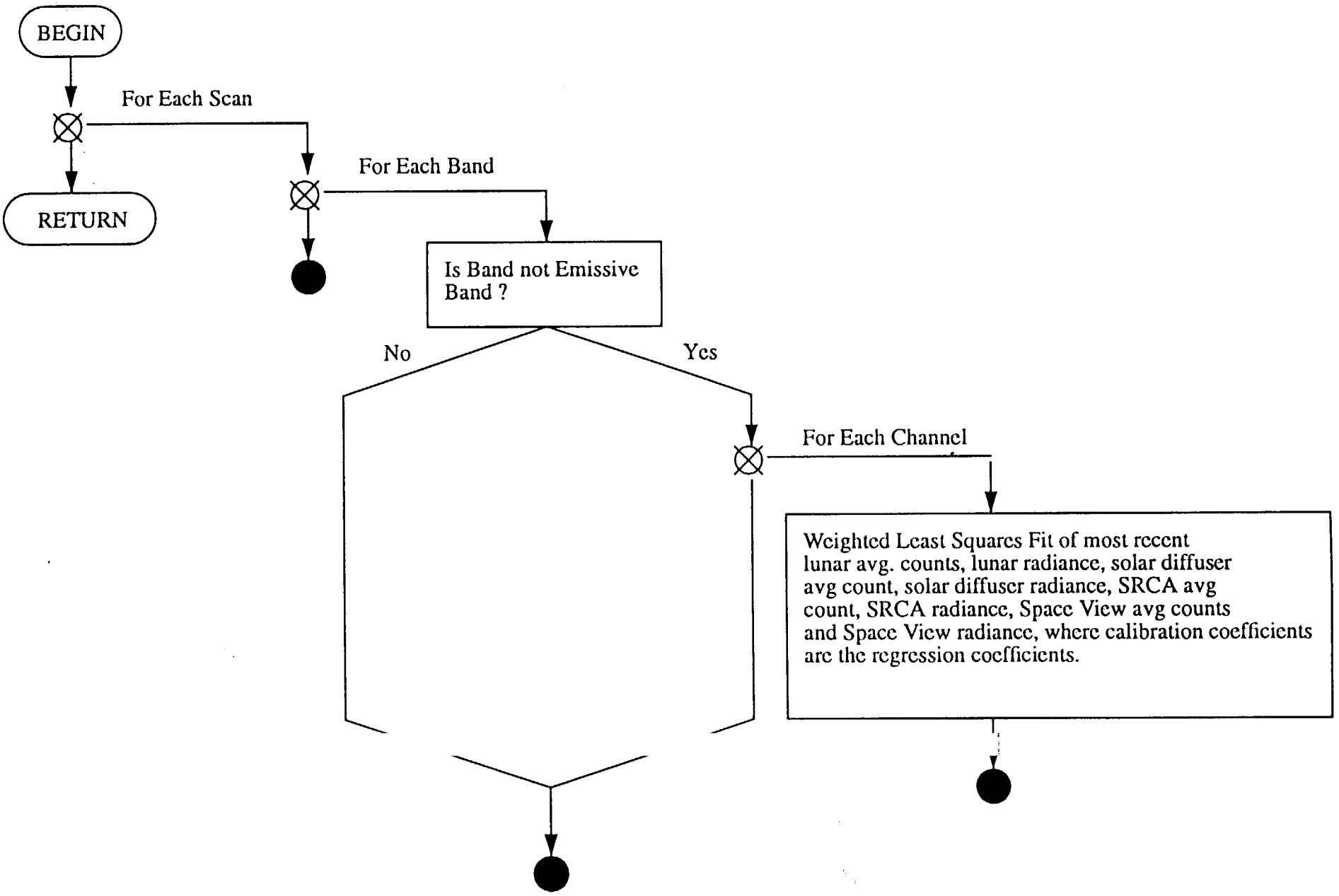

BEGIN
SDSMCharacterization
SDCalc
LinearityCharacterization_1_30
RETURN

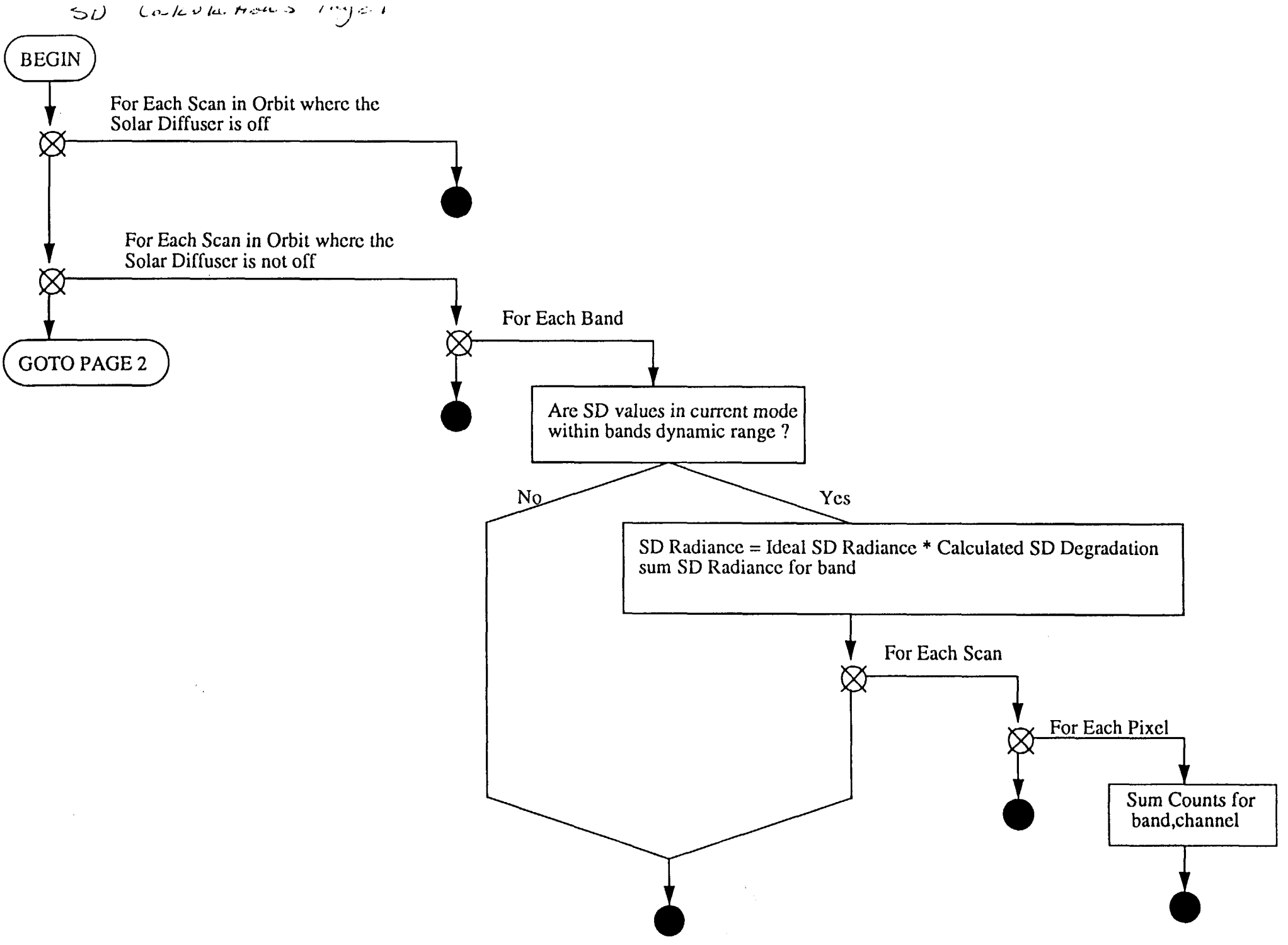
jSDSM Characterization Page 1

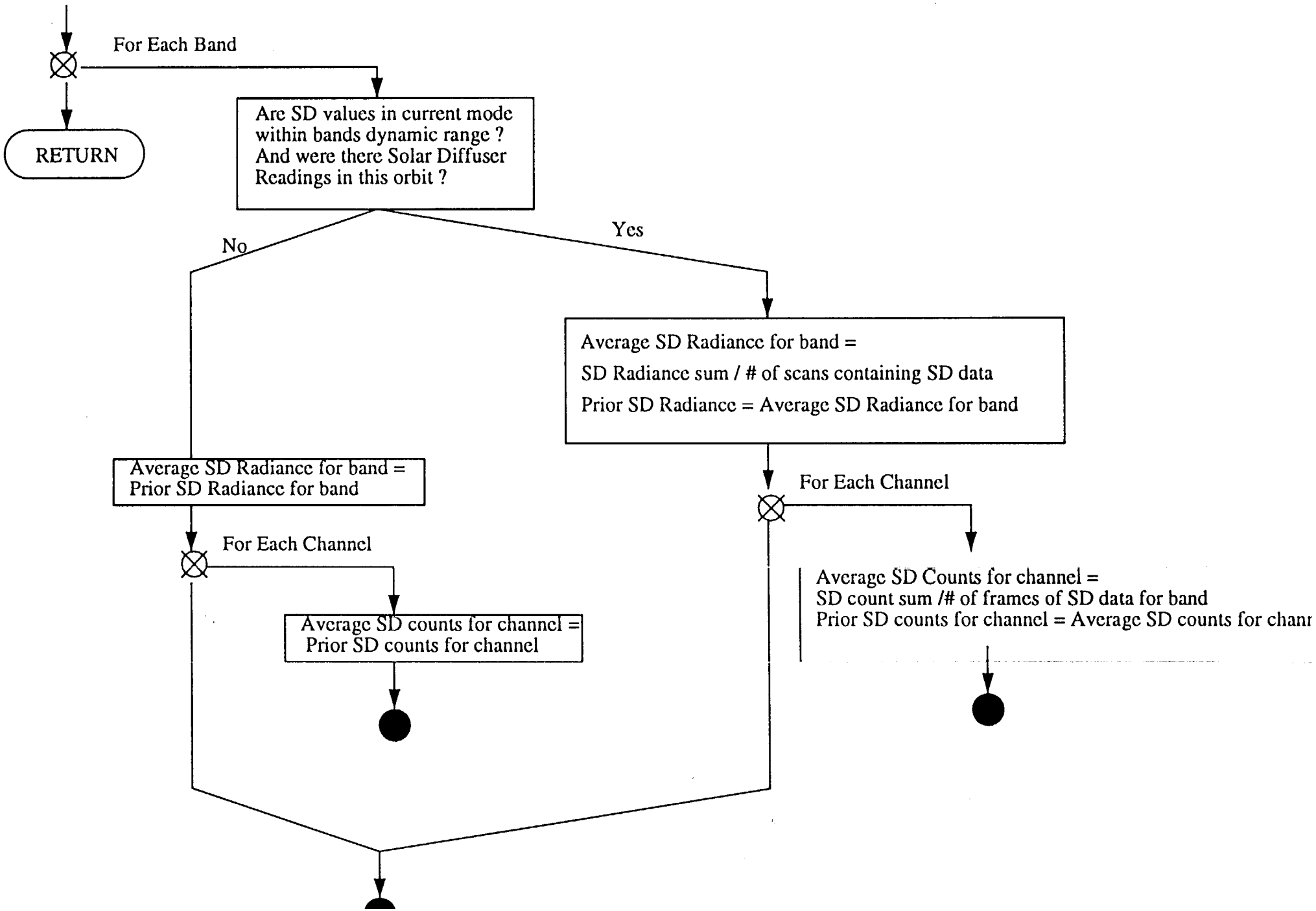



SD readings in current orbit ?
No
Yes
For Each SDSM Band
Avg. SD degradation =
Prior degradation
RETURN
For Each SDSM Band
Are SDSM values in current mode
within bands dynamic range ?
No
Yes
Avg. SD degradation =
Prior degradation
Avg SD degradation =
degradation sum / # of frames of SDSM dat
Prior Degradation =
Avg. SD degradation

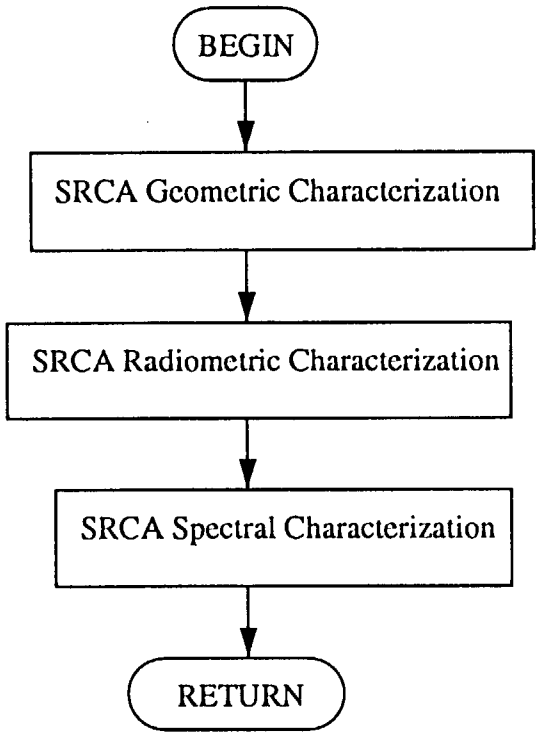

BEGIN
For Each Scan
RETURN
For Each Band
Is Band Emissive Band ?
No
Yes
For Each Channel
/*Perform Linear Fit of BB radiance, average BB counts, Space View Radiance and avg Space View Counts to derive calibration coefficients, which are the regression coefficients*/
LinearFit(BBRadiance,BBAvgCounts,SVRadiance,SVAvgCounts, CalCoeff1,CalCoeff0)


BEGIN
For Each Scan
RETURN
For Each Band
Is Band not Emissive Band ?
No
Yes
For Each Channel
Weighted Least Squares Fit of most recent lunar avg. counts, lunar radiance, solar diffuser avg count, solar diffuser radiance, SRCA avg count, SRCA radiance, Space View avg counts and Space View radiance, where calibration coefficients are the regression coefficients.

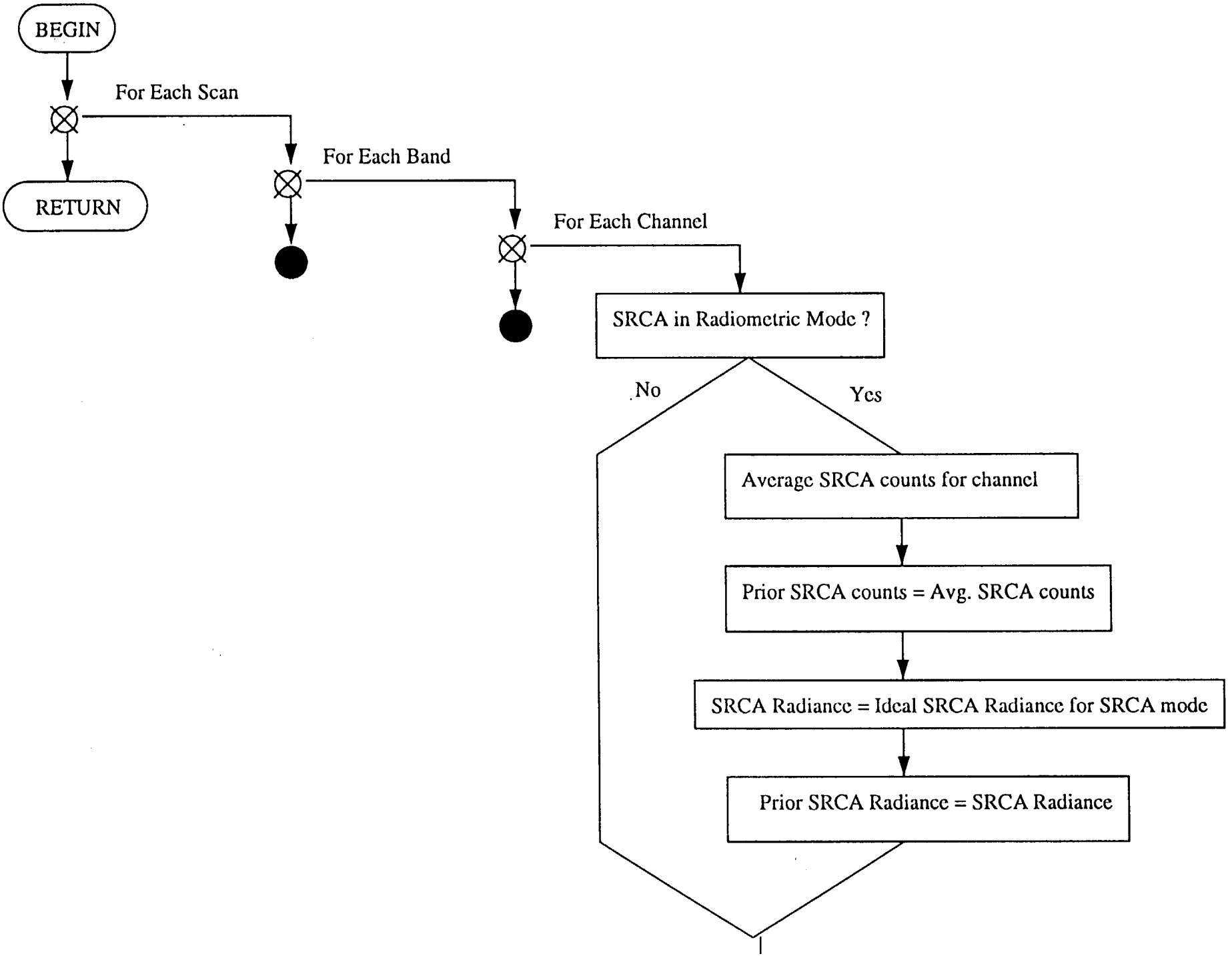

BEGIN
For Each Scan in Orbit where the Solar Diffuser is off
For Each Scan in Orbit where the Solar Diffuser is not off
GOTO PAGE 2
For Each Band
Are SD values in current mode within bands dynamic range ?
No
Yes
SD Radiance = Ideal SD Radiance * Calculated SD Degradation
sum SD Radiance for band
For Each Scan
For Each Pixel
Sum Counts for band,channel


For Each Band
RETURN
Are SD values in current mode within bands dynamic range ? And were there Solar Diffuser Readings in this orbit ?
No
Yes
Average SD Radiance for band = Prior SD Radiance for band
For Each Channel
Average SD counts for channel = Prior SD counts for channel
Average SD Radiance for band =
SD Radiance sum / # of scans containing SD data
Prior SD Radiance = Average SD Radiance for band
For Each Channel
Average SD Counts for channel =
SD count sum /# of frames of SD data for band
Prior SD counts for channel = Average SD counts for chann

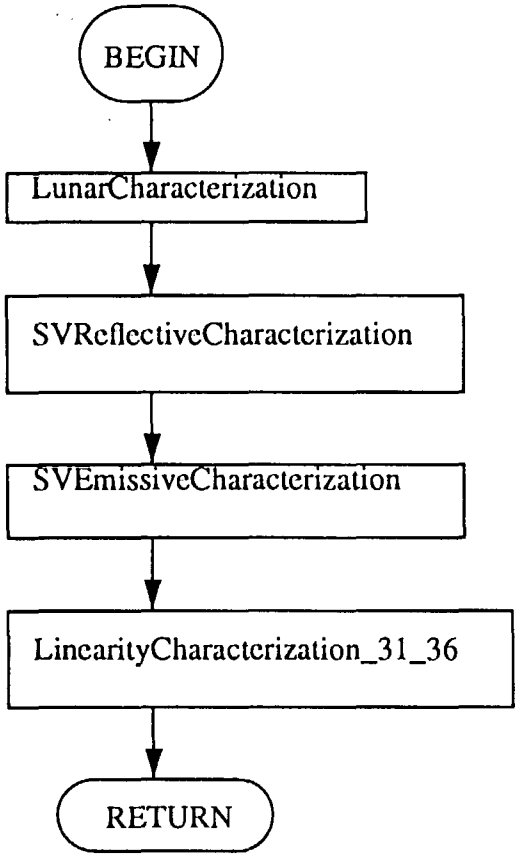
SRCA Characterization



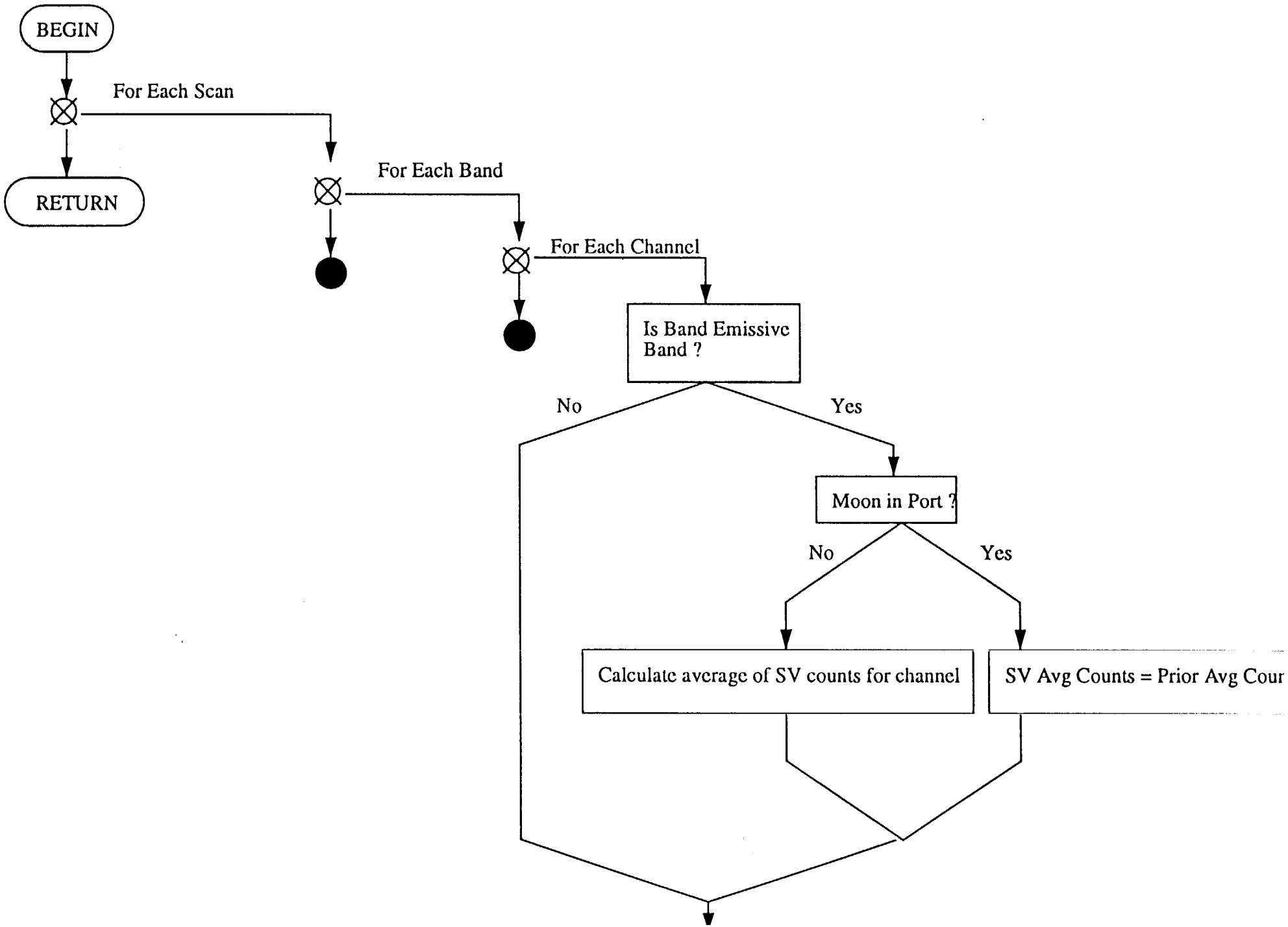
SRCA Radiometric Characterization



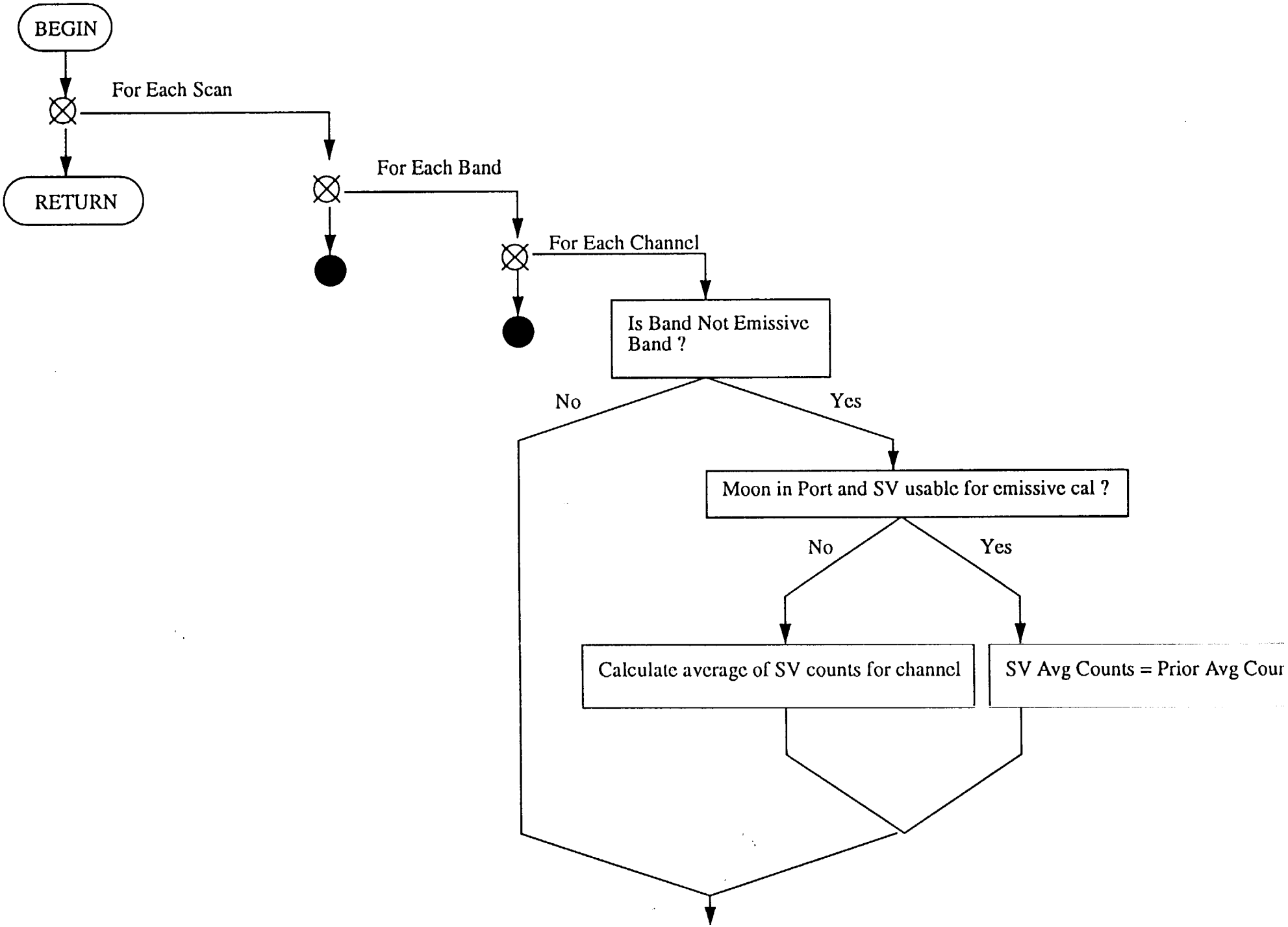
V Characterization



SV Emissive Characterization



SV Reflective Characterization



MODIS ON-ORBIT CALIBRATION SCENARIOS

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CALIBRATION DEVICE	ORBIT USE	ORBIT COLLECT	ORBIT PREP	REMARKS
BB AMBIENT	CONSTANT	EACH SCAN	NA	DC RESTORE
BB HEATED	1X/MO	10 MIN	~~30~~ 100 MIN	~~30~~ 100 MIN WARMUP & 10 MIN EACH SCAN
SD & SDSM	2 ORBITS 1X/WK	6 MIN	5 MIN	HIGH BRDF 1 ORBIT, LOW BRDF NEXT ORBIT; 5 MIN WARMUP; COLLECT 6 MIN; SD DOOR OPENED&CLOSED
SRCA RADIOMETRIC CAL	1X/MO	3X17 MIN	3X2 MIN	WARMUP & COLLECT 3 PTS/ORBIT FOR 57 MIN TOT
SRCA SPECTRAL/SELF CAL	1X/MO	70 MIN	2 MIN	2 MIN WARMUP & 70 MIN COLLECTS
SRCA SPATIAL CAL	1X/3MO	2X37 MIN	2X2 MIN	2 MIN WARMUP & COLLECT 2 PTS/ORBIT FOR 78 MIN TOT

3/93

Lunar Cal.

11/93
93-0868-670

COMPREHENSIVE SET OF IN-FLIGHT CALIBRATORS: RADIOMETRIC, SPECTRAL, SPATIAL, AND STABILITY

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Type of Calibration	Source	Mechanism	Aperture	Spectral Bands	Usage Availability (Max)	Other Comments
Radiometric	Space		Full	MWIR/LWIR	Once per scan line	
Radiometric	Sun	Solar illuminated diffuser	Full	VIS/NIR/ SWIR less Bands 8-16	Once per orbit	0.54 ± 0.03 effective albedo
Radiometric	Sun	Solar illuminated diffuser and screen	Full	VIS/NIR/ SWIR	Once per orbit	0.046 ± 0.005 effective albedo
DC Restore	Blackbody	Blackbody	Full	All	Once per scan line	
Radiometric	Blackbody	Blackbody	Full	MWIR/LWIR		
Radiometric	Incandescent sources	SRCA collimator	Partial	VIS/NIR/ SWIR	Available any time during orbit	
Spatial Registration	Incandescent and IR sources	SRCA collimator with spatial reticles	Partial	All	Available any time during orbit	
Spectral (MODIS)	Incandescent sources	SRCA grating monochromator with collimator	Partial	VIS/NIR/ SWIR	Available any time during orbit	Grating rotated to produce wavelength scan
Spectral (Monochro-mator)	Incandescent source with didymium glass	SRCA grating monochromator with photodiode	Full	0.40 µm to 0.90 µm	Available any time during orbit	Grating rotated to produce wavelength scan
Solar Diffuser Stability Monitor	Sun	SDSM using integrating sphere with bandpass filtered detectors	Full	VIS/NIR/ SWIR	Available once per orbit	Both high and low BRDF diffusers